

WHAT IS CLAIMED IS

1. A valve operator for moving a moveable valve element, with respect to a stationary valve frame, between connect and disconnect positions of the valve element, wherein in said connect position said valve element connects a source that supplies a high pressure fluid to a device, and in said disconnect position said valve element does not connect said source of high pressure fluid to said device, comprising:

5 first and second energizable gear motors that have respective first and second driving members for moving said valve element, and a control for operating each of said gear motor to move the corresponding driving member from an initial position to an operating position and then immediately thereafter back to said initial position;

10 in said operating position of said first driving member said first driving member positions said valve element in said connect position, in said operating position of said second driving member said second driving member positions said valve element in said disconnect position, and in initial positions of said first and second driving members said driving members are each positioned to allow said valve element to be moved between said connect and disconnect positions, whereby said moveable valve element can be moved to a different one of said positions when one of said motors is not energized.

15 2. The valve operator described in claim 1, including:

a default mechanism that moves said moveable valve element to a selected one of said connect and disconnect positions upon detection of an event, when said moveable valve element is not in said selected position.

20 3. The valve operator described in claim 2 including:

a handle fixed to said moveable valve element;

5 said default mechanism includes a main plunger that is moveable against a location on said handle to pivot it to said selected position, and a spring that urges said main plunger against said location on said handle;

10 said default mechanism also includes a second device that is moveable between a blocking position at which said second device blocks said main plunger from moving against said location on said handle and an unblocking position, a spring that urges said second plunger toward said unblocking position, and a fluid pressure operated device that applies a force to said second device that urges said second plunger toward said blocking position with a force dependent on the pressure of a particular fluid, so when the pressure of said particular fluid decreases below a predetermined level said second spring moves said second device to said unblocking position so said main plunger can move against said 15 location on said handle.

4. The valve operator described in claim 1 wherein said valve element is in the form of a disc that is pivotal about an axis on said valve frame, said valve element and valve frame having surfaces that press against each other, and wherein:

5 said valve element includes a handle that has opposite ends on opposite sides of said axis;

10 said driving members are each in the form of a slideable rack, each rack being moved from its initial position in a first direction against one of said handle ends to move the corresponding handle end generally in said first direction to pivot the valve element disc to a different one of said positions, and each rack immediately thereafter being moved back to its initial position, whereby said handle is substantially always free to be pivoted.

5. A valve operator for moving a moveable valve element with respect to a stationary valve frame, to move the valve element between connect and disconnect positions of the valve element, wherein in said connect position said valve element connects a source of high pressure fluid to a device that is operated by said high pressure fluid, and in said disconnect position said valve element does not connect said source of high pressure fluid to said device, comprising:

10 first and second energizable motor assemblies that have respective first and second driving members for moving said valve element, and a control for operating each of said motor assemblies to move the corresponding driving member from an initial position to an operating position and then thereafter automatically back to said initial position;

15 said valve element and driving members are arranged so when said first driving member moves to its operating position said first driving member positions said valve element in said connect position, but when said first driving member moves back to its initial position said first driving member does not change the position of said valve element and is out of the way of movement of said valve member back to its disconnect position, and so when said second driving member moves to its operating position said second driving member positions said valve element in said disconnect position, but when said second driving member moves back to its initial position said second driving member does not change the position of said valve element and lies out of the way of movement of said valve member back to its connect position.

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6. The valve operator described in claim 5 including:

means responsive to a drop in pressure of a particular fluid to a predetermined pressure, for automatically moving said valve element to said

disconnect position.

7. The valve operator described in claim 5 including:

5 a default mechanism for automatically moving said valve element to said disconnect position when the pressure of a particular high pressure fluid falls below a predetermined low level, including a first default operating element, a spring that urges said first default operating element to move from a stowed position and against said valve element to move said valve element to said disconnect position, and a pressure-operated latch that blocks movement of said first default operating element until the pressure of said particular fluid falls below said predetermined low level.

8. The valve operator described in claim 7 wherein:

5 said spring applies a first force to said first default element, while said first motor assembly moves said first driving member with sufficient force to move said first default element back toward its stowed position while moving said valve element to its connect position.

9. The valve operator described in claim 5 wherein:

10 said valve element is pivotally mounted on said valve frame about an axis and said valve element includes a handle with opposite ends that lie on opposite sides of said axis;

said motor assemblies each includes an electric motor, a gear train, and a linearly movable driving member that is positioned to move in a first direction from an initial position and against a different end of said handle to move the handle and the rest of said valve element to change the position of the valve

15 element to a different one of said valve element positions, and to move in a second direction back to said initial position;

a control that energizes each motor assembly to move its driving member from its initial position to its operated position and immediately thereafter back to its initial position.

10. The valve operator described in claim 5 wherein:

20 said valve element is linearly slideable mounted on said valve frame to move forward to said connect position and to move rearward to said disconnect position;

25 said motor assemblies each includes an electric motor, a gear train, and a movable driving member that is positioned to move from an initial position and against said valve element and to continue to an operated position wherein *said* valve element has been moved to a different one of said valve element positions;

30 a control that energizes each motor assembly to move its driving member from its initial position to its operated position and immediately thereafter back to its initial position.